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more the growth of the Tree; since every thing grows in proportion to the Root beneath: But I am doubtful in this, whether I do well or ill, and desire the judgement of others. For, I have heard from some Planters, and afterwards from a Knight who had experience therein, that Roots cut short doe best, as sending forth New roots, which draw sap and nourishment best. And we see that *Moyle's* set on slips that have no roots, come to a Tree sooner And I have oft observed, that a *Moyle* Transplanted after it hath taken root does not live so certainly, or thrive so well as a slip newly set. But I have gone beyond the bounds of a Letter.

*This Letter being imparted to an Ingenious Inquirer into such things, he was pleased to return some of his considerations thereupon, which are like to be published in our next.*

*Some Observations, touching Colours, in order to the Increase of Dyes, and the Fixation of Colours; generously imparted by the Author of the Four above-mention'd Letters, who annexed them to that of Februar. 15. 1670.*

Two things, I conceive, are chiefly aimed at in the Inquiry of Colours, which subject you desire my thoughts of; the one, to increase the *Materia Tinctoria*, and the other, to fix, if possible, those colors, we either have already, or shall hereafter discover for use. As to the *first*, Animals and Vegetables, besides other Natural Bodies, may abundantly furnish us. And in both these kinds *some* Colours are *Apparent*, as the various colours of Flowers, and the juices of fruits, &c. and the *sanies* of Animals: *others* are Latent, and discovered to us by the effects, the several Family's of Salt and other things may have upon them. Concerning the *Apparent* colors of Vegetables and Animals, and the various effects of different Salts in changing them from one colour to another; we have many Instances in *M. Boyle*. And if we might, with the good leave of that Honourable and Learned person, range them after our fashion, we should give you at least a new Prospect of them, and observe to you the conformity and agreement of the effects of Salt on the divers parts of Vegetables: *Viz.* 1. That *Acid* Salts *advance* the colours of Flowers and Berries, that is, according to the Experiments of *M. Boyle*, they make the infusions of *Balaustinum* or Pomgranat-Flowers, Red roses, Clove-jilly flowers, Meferion, Pease-bloom, Violets, Cyanus

Cyanus flowers, of a fairer red; also the juices of the Berries of *Ligustrum*, of black Cherry's, Buck-thorn-berries, of a much fairer red: and to the same purpose Acid Salts make no great alterations upon the white flowers of Jasmin and Snow-drops. 2. That *Urinous* Salts, and *Alcaly's*, on the contrary, quite alter and change the Colours of the same flowers now named, and the juices of the said Berries also, from red to green; even Jasmin and Snow-drops. 3. Again, that in like manner *Urinous* Spirits and *Alcaly's* advance, at least do not quite spoyle the colors of the juices of leaves of Vegetables, of their Wood and Root. Thus M. Boyle tells us, that *Urinous* Spirits and *Alcaly's* make the yellow infusions of *Madder-roots* red; of *Brazil-wood*, purplish; of *Lignum Nephriticum*, blew; the red infusion of *Log-wood*, purple; of the Leaves of *Sena*, red. 4. That, on the contrary, *Acid* Salts quite alter and change the said infusions from red or blew, to yellow.

In the next place we would note to you the effects of Salts upon *Animals* in the production and Change of colours; but the Instances are very few or none, that I meet with in any Author; the *Purple-fish* being quite out of use, and *Cochineil* and *Kermes* are by most questioned, whether they are Animals or no; but I think, we may confidently believe them both to be *Insects*, that is, Worms or *Chrysalys's* of respective Fly's in *proxima fætura*. We find then, and have tried concerning *Cochineil* (which of it self is red,) that upon the affusion of the Oyl of Vitriol, that is, an *Acid* Salt, it strikes the most vivid *crimson* that can be imagined; and with *Urinous* Salts and *Alcaly's*, it will be again changed into an obscure color 'twixt a violet and a purple. *Pliny* somewhere tells us, that the *Gaul'es* in his time could dye with Vegetables, what the Romans with so much danger and pains sought for in the bottom of the Sea. Indeed, we find many Plants mentioned by the same Author, which either are not known to us at this present, or neglected.

To what we have briefly observed out of Authors, we will subjoyne some of our own Considerations and Tryals And *first*, concerning the *Apparent* Colours in Flowers, we think we may insert; 1. That generally all Red, Blew and White flowers are immediately, upon the affusion of an *Alcaly*, changed into a Green colour, and then, in process of no long time, turned Yellow. 2. That all the parts of Vegetables, which are green, will

will in like manner strike a Yellow with an *Alcaly*. 3. That what Flowers are already yellow, are not much changed, if at all, by an *Alcaly* or *Urinous* Spirit. 4. The Blew seed-husks of *Glaſtum Sylveſtre* old, gathered and dry, diluted with water, ſtain a Blew, which upon the affuſion of Lye ſtrikes a Green, which Green or Blew being touched with the Oyl of Vitriol dyes a Purple; all theſe three colours ſtand. 5. On the tops of *Eungius tubuloſus*, ſo called by M. Wray in his late Catalogue of the Plants of England, are certain red knots; theſe, upon the affuſion of Lye, will ſtrike a Purple, and ſtand.

As for the *Latent* Colours in Vegetables and Animals; to be diſcovered to us by the affuſion of Salts; they, likewise, no doubt, are very many. We will ſet down only a few inſtances in both kinds, which have not been, that we know of, diſcovered or taken notice of by others. *Latent Vegetable* colours, 1. The Milky juice of *Lactuca Sylveſtris coſta ſpinofa*, and *Sonchus aſper & levis*, upon the affuſion of Lye, will ſtrike a vivid flame-colour or Crimſon, and after ſome time quite degenerate into a dirty yellow. 2. The Milk of *Cataputia minor*, upon the affuſion of Lye, eſpecially if it be drawn with a knife, and hath any time ſtood upon the blade of it, will ſtrike a Purple or Bloud-red colour, and by and by change into an ignoble yellow. *Latent Animal* dyes, 1. The common Hawthorn-Caterpillar will ſtrike a Purple or Carnation with Lye, and ſtand. 2. The heads of Beetles and Piſmires, &c. will with Lye ſtrike the ſame Carnation-colour, and ſtand. 3. The Amber-coloured *Scolopendra* will give with lye a moſt beautiful and pleaſant *Azure* or *Amethyſtine*, and ſtand.

*Laſtly*, we might conſider the *Fixing* of colours for Uſe; but we are willing to leave this to more experienced perſons, as alſo the Philoſophizing on the particulars we have produced, to better Heads. Some obvious Inferences we may venture to take notice of; 1. That in all the Inſtances above mentioned, whether Vegetable or Animal, there is not one colour *truly* fixed, however there may, I conceive, be ſome uſe made of them, as they are. I ſay, *truly fixed*, that is, proof of Salt and Fire; for, what ſeem to *ſtand* and be *Lye-proof*, are either wholly deſtroyed by a different Salt, or changed into a much different colour; which muſt needs prove a ſtain and blemiſh when it ſhall happen in the uſe of any of them. 2. That both the  
apparent

apparent and latent colours of Vegetables are *fixable*: An instance whereof we may observe in the seed-husks of *Glaſtum*, and the Use Diers make of the leaves after due preparation. 3. It is probable from the ſame inſtance, that we may learn from the colour of ſome part of the Fruit or Seed, what colour the Leaves of any Vegetable and the whole Plant might be made to yield for our uſe. 4. That the *Latent* colours of Vegetables are præexiſtent, and not produced; from the ſame inſtance of *Wood*, and likewise from this that the *Milky* juyce of *Lactuca ſilveſtris* doth afford it ſelf a *Red Serum*. 5. That the change of colours in Flowers is gradual and conſtant. 6. That the colours of Flowers, which will not ſtand with Lye, ſeem to be wholly deſtroyed by it, and irrecoverable: Thus it happens in the Experiment; that one part of a Violet-leaf, upon the affuſion of Lye, is changed very ſoon into yellow, and will never be revived into a red by an Acid ſalt; but if another part of the ſame leaf be ſtill green, it will be revived. 7. That the Dryneſs ſeems to be a means, if not of *fixing*, yet bringing the Vegetable colour into a condition of not wholly and ſuddainly perishing by the otherwiſe deſtroying *Alcaly*. 8. That thoſe Plants or Animals that will ſtrike different and yet vivid colours upon the affuſion of different Salts, and ſtand, as the *Cochinel* and *Glaſtum*, are probably of all others to be reckoned as the beſt Materials.

It would have been a much ſafer way, to have put theſe Inferences in the faſhion of *Quæri's*; but beſides that I affirm no more but matter of fact, it is lawful for our encouragement (as my Lord *Bacon* adviſes) to ſet up reſts by the way, and reſreſh our ſelves with looking back, though perhaps we have not much advanced. You will be pleaſed to excuſe the little cohærence that I have uſed in theſe notes, and attribute it to the readineſs and affection I have to anſwer ſuch inquiries as you put to me. I never yet did make this ſubject any part of my buſineſs, but the deſire I have to ſearch after and examine the Medicinal qualities of things in Nature, hath by the by preſented me with ſuch *Phænomena*, as I was not willing to leave unnoted, nor to reſuſe them you, though in a conſuſed way, becauſe you deſire them. To conclude, how immethodical and barren theſe papers may ſeem; yet the conſideration of them hath led me to a way of *Fixing* colours, which I willingly forbear to relate, until I may have an opportunity of ſhewing the Experiment be-

fore the *R. Society*. I have found out a Colour most exquisitely black, & comparable to the best ink; even in the use of the pen, and which will not change by Fire or Salt. This an *English* Vegetable yielded me, and for ought I know (for I have not repeated the trial on any thing else) the like method will succeed to good purpose. I am, &c.

*An Account of some Books.*

I. *Theodori Kerekringii M. D. ANTHROPOGENIÆ ICHNOGRAPHIA, sive Conformatio Fætus ab Ovo usque ad Ossificationis principia, in supplementum Osteogeniæ Fætuum. Amstelodami, 1671. in 4º.*

After that this Author had the last year published, together with a *Specilegium Anatomicum*, his *Osteogenia Fætuum* ( both which were described N<sup>o</sup>. 54. p. 1094. *seqq.* of these Tracts; ) in the latter of which he had given an Account of the Formation of the *Bones* of an Humane Body, from the *Second* Month after Conception to the very time of the Infants Birth; he considered, that there were two things yet left behind, necessary to the perfect knowledge of *Ossification*; viz. *First*, what might be the Rudiments and Form of an Human Body, before it came to have any Firmness of Bones. *Secondly*, How after an Infants being born, the soft Bones acquire by little and little both their Hardness and Magnitude. Waving for the present the latter of these two, he undertaketh in these sheets (which are but *three*) to deliver the first Elements, as 'twere of our Body, *from* and even *before* the time of Conception; affirming.

1. *Non tantum in nuptis & fecundis Mulieribus, sed etiam in Virginibus esse non minus quam in Gallinis ova ponentibus etiam citra Galli consuetudinem, ova quædam \* pisi viridis magnitudine, in quibus humor latet intus, qui, uti aliorum ovorum albumen & vitellus, dum coquitur, indurefcit: Porro, ova illa mulierum, pelliculis extrinsecus circumdari, quæ postquam in uterum prolapsa sunt ova coitu fecundata, in Amnion & Chorion brevi commutentur; ova autem ipsa, duorum vel trium dierum spatio ad cerasæ nigri majoris magnitudinem excrefcere.*

\* Vide Nic. Stenonis Musculi Descriptionem Anatomicam editam A. 1667. & descriptam N<sup>o</sup>. 32. Ubi in Narrationum ibi annexarum posteriori dictus Dn. Steno memorat, per digressionem, dari in Fœminis Testes ovario analogos. Ipse Author noster observat etiam, Fallopium jam tale quid notasse.